CLAIMS

1. A pin-array, separable, compliant electrical contact member for separably, electrically interconnecting a first electrical device having electrical contacts to a second electrical device having electrical contacts, comprising:

a probe housing having a thickness, and defining a plurality of openings through the thickness;

one or more pin probes, each pin probe located in and protruding from an opening in the probe housing, and each defining an enlargement larger than the opening in which the pin is located, to inhibit lateral pin motion, and also prevent the pins from being removed from their openings vertically in at least one direction; and

a layer of Anisotropic Conductive Elastomer (ACE) adjacent to the probe housing and comprising a plurality of conductive chains of particles through the layer thickness and aligned generally perpendicularly to the layer's major surfaces;

wherein one end of the pin probes are in contact with the electrical contacts of the first electrical device, and the other ends of the pin probes are in compressive contact with a major surface of the ACE layer, and wherein the other major surface of the ACE layer is in contact with the electrical device, such that electrical signals are passed between the two electrical devices through the pin probes and the ACE layer.

2. The separable, compliant pin-array electrical contact member of claim 1 wherein the pin enlargements are on the ends of the pins that are in contact with the ACE layer, to also increase the contact area at the ACE major surface.

3. The separable, compliant pin-array electrical contact member of claim 1 wherein the probe housing comprises a single sheet.

4. The separable, compliant pin-array electrical contact member of claim 1 wherein the probe housing comprises at least two spaced sheets.

5. The separable, compliant pin-array electrical contact member of claim 1 wherein the pin ends that are in contact with the ACE layer are substantially flat.

6. The separable, compliant pin-array electrical contact member of claim 1 wherein the electrical contacts on the first electrical device have a particular end shape, and the ends of the pins in contact with them have a complementary shape to maximize contact area and minimize contact damage.

7. The separable, compliant pin-array electrical contact member of claim 1 wherein the ACE layer is coupled to the probe housing.

8. The separable, compliant pin-array electrical contact member of claim 7 wherein the ACE layer is coupled to the probe housing by an adhesive.

9. The separable, compliant pin-array electrical contact member of claim 7 wherein the ACE layer is held in tension.

10. The separable, compliant pin-array electrical contact member of claim 1 wherein the ACE layer is not continuous, and the probe housing defines an opening above the ACE layer discontinuity, to allow the contact member to be placed on a substrate with components protruding from its surface.

11. The separable, compliant pin-array electrical contact member of claim 1 wherein the pin enlargements are captured within the probe housing.

12. The separable, compliant pin-array electrical contact member of claim 11 wherein the probe housing comprises vertically spaced layers defining a cavity within which the pin enlargements are captured.

13. The separable, compliant pin-array electrical contact member of claim 1 further comprising a frame to which the ACE layer is coupled.

14. The separable, compliant pin-array electrical contact member of claim 13 wherein the ACE layer is held in tension by the frame.

15. The separable, compliant pin-array electrical contact member of claim 13 wherein the probe housing fits within the frame.

16. The separable, compliant pin-array electrical contact member of claim 1 further comprising means for aligning the probe housing to the second electrical device.

17. The separable, compliant pin-array electrical contact member of claim 16 wherein the means for aligning includes alignment pins.

18. The separable, compliant pin-array electrical contact member of claim 17, further comprising an alignment frame, wherein the alignment frame is coupled to the second electrical device with alignment pins, and the probe housing is coupled to the alignment frame by alignment pins.

19. The separable, compliant pin-array electrical contact member of claim 1 wherein the probe housing is vertically compressible.

20. The separable, compliant pin-array electrical contact member of claim 19 wherein the probe housing comprises one or more vertically compliant members to provide vertical compliance to the housing.

21. The separable, compliant pin-array electrical contact member of claim 19 wherein the top surface of the probe housing is above the tops of the pins when it is not compressed, to protect the pins from damage.

22. A double-ended separable, compliant pin-array electrical contact member comprising two of the contact members of claim 1, with a single layer of ACE between the two contact members, to present for external connection double-ended pins.

23. A pin-array, separable, compliant electrical contact member for separably, electrically interconnecting a first electrical device having electrical contacts to a second electrical device having electrical contacts, comprising:

a probe housing having a thickness, and defining a plurality of openings through the thickness;

one or more pin probes, each pin probe located in and protruding from an opening in the probe housing, and each defining an enlargement larger than the opening in which the pin is located, to inhibit lateral pin motion, and also prevent the pins from being removed from their openings vertically in at least one direction; and

a layer of Anisotropic Conductive Elastomer (ACE) adjacent to the probe housing and comprising a plurality of conductive chains of particles through the layer thickness and aligned generally perpendicularly to the layer's major surfaces;

a frame to which the ACE layer is coupled, wherein the ACE layer is held in tension by the frame, and wherein the probe housing fits within the frame;

wherein one end of the pin probes are in contact with the electrical contacts of the first electrical device, and the other ends of the pin probes are in compressive contact with a major surface of the ACE layer, and wherein the other major surface of the ACE layer is in contact

with the electrical device, such that electrical signals are passed between the two electrical devices through the pin probes and the ACE layer.

24. The separable, compliant pin-array electrical contact member of claim 23 wherein the pin enlargements are captured within the probe housing.

25. The separable, compliant pin-array electrical contact member of claim 24 wherein the probe housing comprises vertically spaced layers defining a cavity within which the pin enlargements are captured.

26. The separable, compliant pin-array electrical contact member of claim 23 further comprising means for aligning the probe housing to the second electrical device.

27. The separable, compliant pin-array electrical contact member of claim 26 wherein the means for aligning includes alignment pins.

28. The separable, compliant pin-array electrical contact member of claim 27, further comprising an alignment frame, wherein the alignment frame is coupled to the second electrical device with alignment pins, and the probe housing is coupled to the alignment frame by alignment pins.

29. The separable, compliant pin-array electrical contact member of claim 23 wherein the probe housing is vertically compressible.

30. The separable, compliant pin-array electrical contact member of claim 29 wherein the probe housing comprises one or more vertically compliant members to provide vertical compliance to the housing.

31. The separable, compliant pin-array electrical contact member of claim 29 wherein the top surface of the probe housing is above the tops of the pins when it is not compressed, to protect the pins from damage.